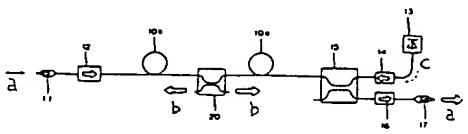
(54) ERBIUM-DROPED OPTICAL FIBER AMPLIFIER
(11) 4-86728 (A) (43) 19.3.1992 (19) JP
(21) Appl. No. 2-201440 (22) 31.7.1990
(71) FUJITSU LTD (72) KEIKO TAKEDA(2)
(51) Int. Cl⁵. G02F1/35,H01S3/07,H01S3/094,H04B10/02

PURPOSE: To obtain adequate signal light by making the signal light and pumping light incident on an optical fiber doped with Er and branching and removing the light of the wavelength to affect the amplification of the signal light among the naturally released light rays generated in the optical fiber.

CONSTITUTION: A demultiplexer 20 interposed between the Er-doped optical fibers 10a and 10b branches and releases the naturally released light on the longer wavelength side than the incident signal light. The pumping light emitted from a pumping light source 13 propagates to the Er-doped optical fiber 10a, the demultiplexer 20 and the Er-doped optical fiber 10b. The signal light is made incident from a signal light input terminal 11 to the Er-doped optical fiber 10b and is amplified. The naturally released light is generated at this time, but the light on the longer wavelength side than the signal light of the naturally released light is branched and released by the demultiplexer 20 of the ensuing state and the signal light outputted from the demultiplexer 20 is further amplified in the Er-doped optical fiber 10a and is emitted therefrom. The adequate output signal light is obtd. in this way.

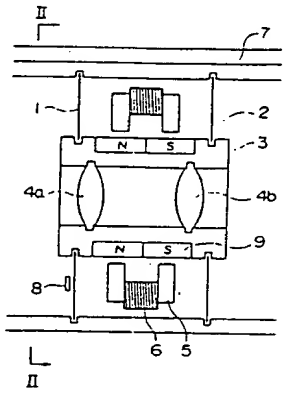


a: signal light. b: naturally released light. c: pumping light

(54) LENS SUPPORTING MECHANISM
(11) 4-86729 (A) (43) 19.3.1992 (19) JP
(21) Appl. No. 2-202817 (22) 31.7.1990
(71) CANON INC (72) MASAYOSHI SEKINE
(51) Int. Cl⁵. G03B3/10,G02B7/04,G03B13/34

PURPOSE: To eliminate the friction resistance by sliding and the clatters, etc., by fitting by supporting a connecting member which is concentrically disposed in a lens barrel movably in the lens barrel by means of elastic members displaceable in an optical axis direction and fixing lens elements to the connecting member.

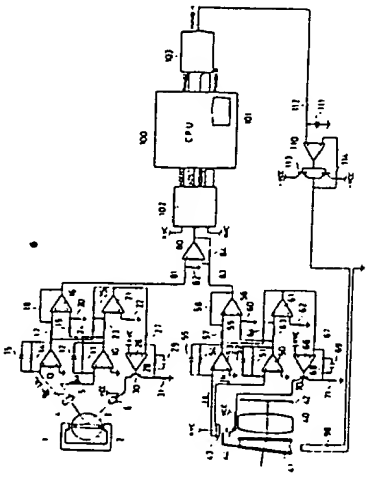
CONSTITUTION: A lens holding frame 3 is disposed in an outer cylinder 7 of the lens barrel and lenses 4a, 4b are fixed to this holding frame. The lens holding frame 3 is supported in the outside cylinder 7 of the lens barrel by means of two sheets of elastic flat plates. Two sheets of the elastic flat plates 1, 2 are disposed in parallel so that the holding frame 3 can be moved only in the Z direction. A permanent magnet 9 is fixed to the outer peripheral part of the lens holding frame 3 and an electromagnet constituted by winding a coil 6 in an iron core 5 is disposed to face the permanent magnet 9. Then, attraction force and repulsion force are generated with the permanent magnet 9 by changing the energization state of the coil 6. The holding frame 3 to which the permanent magnet 9 is fixed obtains the thrust to the outside cylinder 7 and moves in the optical axis direction. The friction by sliding and the clatter and backlash by the fitting are decreased in this way and, therefore, the smooth movement of the lens group is assured.



(54) VIBRATION PROOF DEVICE FOR CAMERA
(11) 4-86730 (A) (43) 19.3.1992 (19) JP
(21) Appl. No. 2-201185 (22) 31.7.1990
(71) CANON INC (72) YASUHIKO SHIOMI
(51) Int. Cl⁵. G03B5/00,G03B17/00

PURPOSE: To improve minimum resolution for controlled vibration by analogically obtaining the output of difference between the displacement amount of blurring with respect to absolute space and the displacement amount of the inclination of a correction optical means, digitally calculating the output of the difference and obtaining output for control of the correction optical means.

CONSTITUTION: A floating body 4 which can be freely rotated is disposed in liquid 3 filling up an outer jacket 2. Signal light from a light emitting element 6 is reflected on the surface of the floating body 4 and made incident on a light receiving element for detecting a position 5. Then, it is changed by a current outputted by the element 5 and the movement of the floating body 4 when the body 4 is relatively rotated with respect to the jacket 2. On the other hand, the displacement amount of the angle of a variable apex angle prism 41 which is used as the correction optical means is also detected by the same method as a blurring detection means. Then, the difference between the displacement output of the blurring of the blurring detection means and the output of the displacement of the angle of the prism 41, that means, the output of the difference between the displacement amount of the blurring with respect to the absolute space and the displacement amount of the inclination of the correction optical means is analogically obtained. Thereafter, the output of the difference is digitally calculated and the output for control of the correction optical means is obtained. Thus, the minimum resolution for controlled the vibration is improved.



101: sampling timer. 102: A/D converter. 103: PWM timer